

## (2) INFORMATION FOR SEQ ID NO: 1:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 6152 base pairs  
 (B) TYPE: nucleotide  
 (C) STRANDEDNESS: double  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

ATTATTTAT TTTTATTGTI TTATTTCTII TTTTTCITTA AATTGTATAT TTATAAATAT 60  
 TTTAAAAAGT TAGAAAATGA CAAATAGTAA TTACAAATCA AATAATAAAA CATATAATGA 120  
 AATAATAAAT GAACAAATAA CTACCATATT TAATAGAACA AATATGAATC CGATAAAAAA 180  
 ATGTCATATG AGAGAAAAAA TAAATAAGTA CTTTTTTTTG ATCAAAATTT TGACATGCAC 240  
 CATTTTAAATA TGGGCGTAC AATATGATAA TAACGTAAGA TAAAAACTA AATAATAAAT 300  
 ATAAATAAAA AAAAAAAAAA AAAAAAAAAA ATCAACTATA TAGTATGTAT AATATATATA 360  
 TATATATATA TATATATATA TATATATATA TATTTATTTT TATTTATTTA TTAATTTTTT 420  
 TTTTTTTATA TTATCTTTTT AGTCIGATAT AAACAAGAGT TGGAAAAAA ATACGTATGT 480  
 AGATAAGAAA TTGAATAAAC TATTTAACAG AAGTTTAGGA GAATCTCAAG TAAATCGTGA 540  
 ATTAGCTAGT GAAGAAGTAA AGGAAAAAAT TCTTGACTTA TTAGAAGAAG GAAATACATT 600  
 AACTGAAGT GTAGATGATA ATAAAAATTT AGAAGAAGCC GAAGATATAA AGGAAAAATAT 660  
 CTTATTAACT AATATAGAAG AACCAAAAGA AAATATTATT GACAATTTAT TAAATAATAT 720  
 TGGACAAAAT TCAGAAAAAC AAGAAAGTGT ATCAGAAAAT GTACAAGTCA GTGATGAACT 780  
 TTTTAAATGAA TTATTAAATA GTGTAGATGT TAATGGAGAA GTAAAAGAAA ATATTITGGA 840  
 GGAAAGTCAA GTTAATGACG ATATTTTTAA TAGTTTACTA AAAAGTGTTC AACAAGAACA 900  
 ACAACACAAT GTTGAAGAAA AAGTTGAAGA AAGTGTAGAA GAAAATGACG AAGAAAGTGT 960  
 AGAAGAAAAT GTAGAAGAAA ATGTAGAAGA AAATGACCAC GGAAGTCTAC CCTCAAGTGT 1020  
 TGAAGAAAGT ATAGCTTCAA GTGTGATGA AAGTATAGAT TCAAGTATTC AAGAAAATGT 1080  
 AGCTCCAAGT GTTGAAGAAA TCGTAGCTCC AAGTCTTCTA GAAAGTGTGC CTCCAAGTGT 1140

TGAAGAAAGT GTAGAAGAAA ATGTTGAAGA AAGTGTAGCT GAAAATGTTG AAGAAAGTGT 1200  
AGCTGAAAAT GTTGAAGAAA GTGTAGCTGA AAATGTTGAA GAAAGTGTAG CTGAAAATGT 1260  
TGAAGAAATC GTAGCTCCAA CTGTTGAAGA AATCGTAGCT CCAACTGTTG AAGAAATTGT 1320  
AGCTCCAAGT GTTGTAGAAA GTGTGGCTCC AAGTGTGAA GAAAGTGTAG AAGAAAATGT 1380  
TGAAGAAAGT GTAGCTGAAA ATGTTGAAGA AAGTGTAGCT GAAAATGTTG AAGAAAGTGT 1440  
AGCTGAAAAT GTTGAAGAAA GTGTAGCTGA AAATGTTGAA GAAAGTGTAG CTGAAAATGT 1500  
TGAAGAAATC GTAGCTCCAA CTGTTGAAGA AATCGTAGCT CCAACTGTTG AAGAAATTGT 1560  
AGCTCCAAGT GTTGTAGAAA GTGTGGCTCC AAGTGTGAA GAAAGTGTAG AAGAAAATGT 1620  
TGAAGAAAGT GTAGCTGAAA ATGTTGAAGA AAGTGTAGCT GAAAATGTTG AAGAAAGTGT 1680  
AGCTGAAAAT GTTGAAGAAA GTGTAGCTGA AAATGTTGAA GAAAGTGTAG CTGAAAATGT 1740  
TGAAGAAAGT GTAGCTGAAA ATGTTGAAGA AAGTGTAGCT GAAAATGTTG AAGAAATCGT 1800  
AGCTCCAAGT GTTGAAGAAA TCGTAGCTCC AACTGTTGAA GAAATTGTAG CTCCAAGTGT 1860  
TGTAGAAAGT GTGGCTCCAA GTGTTGAAGA AAGTGTAGAA GAAAATGTTG AAGAAAGTGT 1920  
AGCTGAAAAT GTTGAAGAAA GTGTAGCTGA AAATGTTGAA GAAAGTGTAG CTGAAAATGT 1980  
TGAAGAAAGT GTAGCTGAAA ATGTTGAAGA AATCGTAGCT CCAACTGTTG AAGAAATCGT 2040  
AGCTCCAAGT GTTGAAGAAA TTGTAGCTCC AAGTGTGTA GAAAGTGTGG CTCCAAGTGT 2100  
TGAAGAAAGT GTAGAAGAAA ATGTTGAAGA AAGTGTAGCT GAAAATGTTG AAGAAAGTGT 2160  
AGCTGAAAAT GTTGAAGAAA GTGTAGCTGA AAATGTTGAA GAAATCGTAG CTCCAAGTGT 2220  
TGAAGAAATC GTAGCTCCAA CTGTTGAAGA AATTGTAGCT CCAAGTGTG TAGAAAGTGT 2280  
GGCTCCAAGT GTTGAAGAAA GTGTAGAAGA AAATGTTGAA GAAAGTGTAG CTGAAAATGT 2340  
TGAAGAAAGT GTAGCTGAAA ATGTTGAAGA AAGTGTAGCT GAAAATGTTG AAGAAAGTGT 2400  
AGCTGAAAAT GTTGAAGAAA TCGTAGCTCC AACTGTTGAA GAAATCGTAG CTCCAAGTGT 2460  
TGAAGAAATT GTAGCTCCAA GTGTTGTAGA AAGTGTGGCT CCAAGTGTG AAGAAAGTGT 2520  
AGAAGAAAAT GTTGAAGAAA GTGTAGCTGA AAATGTTGAA GAAAGTGTAG CTGAAAATGT 2580  
TGAAGAAAGT GTAGCTGAAA ATGTTGAAGA AAGTGTAGCT CCAACTGTTG AAGAAATTGT 2640  
AGCTCCAAGT GTTGAAGAAA GTGTAGCTCC AAGTGTGAA GAAAGTGTG CTGAAAACGT 2700  
TGCAACAAAT TTATCAGACA ATCTTTAAG TAATTTATTA GCTGGTATCG AACTGAGGA 2760

FIGURE 1/B

AATAAAGCAC AGTATATTAA ATGAGATAGA AGAAGTAAAA GAAAATGTAG TCACCAGAAT 2820  
 ACTAGAAAAC GTAGAAGAAA CTACAGCTGA AAGTGTAAGT ACTTTTAGTA ACATATTAGA 2880  
 GGAGATACAA GAAAATAGTA TTAAGTAAAG TACTATAGAG GAAAAATTAG AAGAACTCCA 2940  
 CGAAAATGTA TTAAGTGCCG CTTTAGAAAA TACCCAAAGT GAAGAGGAAA AGAAAGAAGT 3000  
 AATAGATGTA ATTGAAGAAG TAAAAGAAGA GGTGGCTACC ACTTTAATAG AAAGTGTGGA 3060  
 ACAGGCAGAA GAAAAGAGCG CAAATACAAAT TACGGAAATA TTTGAAAATT TAGAAGAAAA 3120  
 TGCAGTAGAA AGTAATGAAA ATGTTGCAGA GAATTTAGAG AAATTAAACG AAAGTGTATT 3180  
 TAATACTGTA TTAGATAAAG TAGAGGAAAC AGTAGAAAT AGCGGAGAAA GTTTAGAAAA 3240  
 CAATGAAATG GATAAAGCAT TTTTACTGCA AATATTTGAT AATGTAAAAG GAATACAAGA 3300  
 AAATTTATTA ACAGGTATGT TTCGAAGTAT AGAAACCACT ATAGTAATCC AATCAGAAGA 3360  
 AAAGGTTGAT TTGAATGAAA ATGTGGTTAG TTCGATTTTA GATAATATAG AAAATATGAA 3420  
 AGAAGGTTTA TTAAATAAAT TAGAAAATAT TTCAAGTACT GAAGGTGTTT AAGAACTGT 3480  
 AACTGAACAT GTAGAAGAAA ATGTATATGT GGATGTTGAT GTTCCTGCTA TCAAAGATCA 3540  
 ATTTTLAGGA ATATTAAATG AGGCAGGAGG GTTGAAAGAA ATGTTTTTTA ATTTGGAAGA 3600  
 TGTATTTAAA AGTGAAAGTG ATGTAAATAC TGTAGAAGAA ATTAAGGATG AACCGGTTCA 3660  
 AAAAGAGGTA GAAAAGAAA CTGTTAGTAT TATTGAAGAA ATGGAAGAAA ATATTGTAGA 3720  
 TGTATTAGAG GAAGAAAAAG AAGATTAAAC AGACAAGATG ATAGATGCAG TAGAAGAATC 3780  
 CATAGAAATA TCTTCAGATT CTAAAGAAGA AACTGAATCT ATTAAAGATA AAGAAAAAGA 3840  
 TGTTCACCTA GTTGTGGAAG AAGTTCAAGA CAATGATATG GATGAAAGTG TTGAGAAAAGT 3900  
 TTTAGAATTG AAAAATATGG AAGAGGAGTT AATGAAGGAT GCTGTTGAAA TAAATGACAT 3960  
 TACTAGCAAA CTTATTGAAG AAAGTCAAGA GTTAAATGAA GTAGAAGCAG ATTTAATAAA 4020  
 AGATATGCAA AAATTAAGAG AATTAGAAAA AGCATTATCA GAAGATTCTA AAGAAATAAT 4080  
 AGATGCAAAA GATGATACAT TAGAAAAAGT TATTGAAGAG GAACATGATA TAACGACGAC 4140  
 GTTGGATGAA GTTGTAGAAT TAAAAGATGT CGAAGAAGAC AAGATCGAAA AAGTATCTGA 4200  
 TTTAAAGAT CTTGAAGAAG ATATATTAAA AGAAGTAAAA GAAATCAAAG AACTTGAAGG 4260  
 TGAAATTTTA GAAGATTATA AAGAATTAAA AACTATTGAA ACAGATATTI TAGAAGAGAA 4320  
 AAAAGAAATA GAAAAGATC ATTTGAAAA ATTGGAAGAA GAAGCTGAAG AAATAAAGA 4380

FIGURE 1/C

TCTTGAAGCA GATATATTAA AAGAAGTATC TTCATTAGAA GTTGAAGAAG AAAAAAATT 4440  
 AGAAGAAGTA CACGAATTAA AAGAAGACGT AGAACATATA ATAAGTGGTG ATGCCCATAT 4500  
 AAAAGGTTTC GAAGAAGATG ATTTAGAAGA AGTAGATGAT TAAAAAGGAA GTATATTAGA 4560  
 CATGTTAAAC GGAGATATGC AATTAGCCGA TATGGATAAG GAAAGTTTAC AAGATGTAAC 4620  
 AACAAAACTT GGAGAAAGAG TTGAATCCTT AAAAGATGTT TTATCTAGTG CATTAGGCAT 4680  
 GGATGAAGAA CAAATGAAAA CAAGAAAAAA AGCTCAAAGA CCTAAGTTGG AAGAAGTATT 4740  
 ATTTAAAGAA GAGGTTAAAG AAGAACCAA GAAAAAATA AAAAAAAGA AAGTAAGGTT 4800  
 TGATATTAA GATAAGGAAC CAAAAGATGA AATACTAGAA GTTGAAATGA AAGATGAACA 4860  
 TATAGAAGAA CATGTAGAAG AAGATATAGA AGAACATATA GAAGAAGATA AAGTTGAAGA 4920  
 TATAGATGAA GATATAGATG AAGATATAGG TGAAGACAAA GATGAAGTTA TAGATTAAAT 4980  
 AGTCCAAAA GAGAAACGCA TTGAAAAGCT TAAACCGAAA AAAAAAAT TAGAAAAAA 5040  
 AGTTGAAGAA GGTGTTAGTG GTCTTAAAA ACACGTAGAC GAAGTAATGA AATATGTTCA 5100  
 AAAAATTGAT AAAGAAGTTG ATAAAGAAGT ATCTAAAGCT TTAGAATCAA AAAATGATGT 5160  
 TACTAATGTT TTAACAACA ATCAAGATTT TTTAGTAAA GTTAAAACT TCGTAAAAAA 5220  
 ATATAAAGTA TTTGCTGCAC CATTATATC TGGCGTTGCA GCATTGTCAT CATATGTAGT 5280  
 TGGGTTCCTT ACATTTTCTT TATTTTCATC ATGTGTAACA ATAGCTTCTT CAAGTTACTT 5340  
 ATTATCAAAA GTTGACAAA CTATAAATAA AAATAAGGAG AGACCGTTTT ATTCATTTGT 5400  
 ATTTGATATC TTTAAGAATT TAAACATT ATTACAACA ATGAAAGAAA AATTAGTAA 5460  
 AGAAAAAAT AATAATGTAA TAGAAGTAAC AAACAAAGCT GAGAAAAAAG GTAAATGTACA 5520  
 GGTAACAAAT AAAACCGAGA AAACAACTAA AGTTGATAAA AATAATAAAG TACCGAAAA 5580  
 AAGAAGAAGC CAAAAATCAA AATAAAAAAT TGCAGAAGAG TGAATGATT GGAGCGAACA 5640  
 ATAAATTAA TCGATAAAAA ATATAAAAT GTATATATTA TGTAAATATA TATAAATAA 5700  
 TAAATAATA CATACATATA TATATATATA TATATGTATC TTTTACAAA ATTTAAAAAT 5760  
 TTTAAATTT ATATATATTA ATATTTATAT TTTCCATAT ATAATTTTAT TTTCAATATT 5820  
 TTATTTTAA TTATAAATGT TTTTACAGA GTTTATGTTT TTTAATTAAT ATATAGATTT 5880  
 CTGTAAGAAA CTGTATATTA TTCATACGAT ATATGTAATA TTAATTATT GTGTTTATT 5940  
 AAAATTTATA TTATATAATA TATATATATA TATATATGTA TATATATTAG AAGATAAAAA 6000

FIGURE 1/D

TTIAGCTTAT TTGCTTGTI ATGCAAATAA GCTTTTTTTT TTTTTTTTTT TTTTTTTTC 6060  
ATATAAACGA TGTTTAATTT TTAATTTTAA ATATTTTATA TAAATATTTT TTCCTAAAAA 6120  
AAAAAAAAAT TAAAAAAAAC TTATATTTCG AA 6152

## (2) INFORMATION FOR SEQ ID NO: 2:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5361 base pairs  
 (B) TYPE: nucleotide  
 (C) STRANDEDNESS: double  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: cDNA

## (ix) FEATURE:

- (A) NAME/KEY: CDS  
 (B) LOCATION: 1..5361

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

ATG ACA AAT AGT AAT TAC AAA TCA AAT AAT AAA ACA TAT AAT GAA AAT 48  
 Met Thr Asn Ser Asn Tyr Lys Ser Asn Asn Lys Thr Tyr Asn Glu Asn  
 1 5 10 15

AAT AAT GAA CAA ATA ACT ACC ATA TTT AAT AGA ACA AAT ATG AAT CCG 96  
 Asn Asn Glu Gln Ile Thr Thr Ile Phe Asn Arg Thr Asn Met Asn Pro  
 20 25 30

ATA AAA AAA TGT CAT ATG AGA GAA AAA ATA AAT AAG TAC TTT TTT TTG 144  
 Ile Lys Lys Cys His Met Arg Glu Lys Ile Asn Lys Tyr Phe Phe Leu  
 35 40 45

ATC AAA ATT TTG ACA TGC ACC ATT TTA ATA TGG GCT GTA CAA TAT GAT 192  
 Ile Lys Ile Leu Thr Cys Thr Ile Leu Ile Trp Ala Val Gln Tyr Asp  
 50 55 60

AAT AAC TCT GAT ATA AAC AAG AGT TGC AAA AAA AAT ACG TAT GTA GAT 240  
 Asn Asn Ser Asp Ile Asn Lys Ser Trp Lys Lys Asn Thr Tyr Val Asp  
 65 70 75 80

AAG AAA TTG AAT AAA CTA TTT AAC AGA AGT TTA GGA GAA TCT CAA GTA 288  
 Lys Lys Leu Asn Lys Leu Phe Asn Arg Ser Leu Gly Glu Ser Gln Val  
 85 90 95

AAT GGT GAA TTA GCT AGT GAA GAA GTA AAG GAA AAA ATT CTT GAC TTA 336  
 Asn Gly Glu Leu Ala Ser Glu Glu Val Lys Glu Lys Ile Leu Asp Leu  
 100 105 110

TTA GAA GAA GGA AAT ACA TTA ACT GAA AGT GTA GAT GAT AAT AAA AAT 384  
 Leu Glu Glu Gly Asn Thr Leu Thr Glu Ser Val Asp Asp Asn Lys Asn  
 115 120 125

FIGURE 2/A

TTA GAA GAA GCC GAA GAT ATA AAG GAA AAT ATC TTA TTA AGT AAT ATA Leu Glu Glu Ala Glu Asp Ile Lys Glu Asn Ile Leu Leu Ser Asn Ile 130 135 140	432
GAA GAA CCA AAA GAA AAT ATT ATT GAC AAT TTA TTA AAT AAT ATT GGA Glu Glu Pro Lys Glu Asn Ile Ile Asp Asn Leu Leu Asn Asn Ile Gly 145 150 155 160	480
CAA AAT TCA GAA AAA CAA GAA AGT GTA TCA GAA AAT GTA CAA GTC AGT Gln Asn Ser Glu Lys Gln Glu Ser Val Ser Glu Asn Val Gln Val Ser 165 170 175	528
GAT GAA CTT TTT AAT GAA TTA TTA AAT AGT GTA GAT GTT AAT GGA GAA Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly Glu 180 185 190	576
GTA AAA GAA AAT ATT TTG GAG GAA AGT CAA GTT AAT GAC GAT ATT TTT Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile Phe 195 200 205	624
AAT AGT TTA GTA AAA AGT GTT CAA CAA GAA CAA CAA CAC AAT GTT GAA Asn Ser Leu Val Lys Ser Val Gln Gln Glu Gln Gln His Asn Val Glu 210 215 220	672
GAA AAA GTT GAA GAA AGT GTA GAA GAA AAT GAC GAA GAA AGT GTA GAA Glu Lys Val Glu Glu Ser Val Glu Glu Asn Asp Glu Glu Ser Val Glu 225 230 235 240	720
GAA AAT GTA GAA GAA AAT GTA GAA GAA AAT GAC GAC GCA AGT GTA GCC Glu Asn Val Glu Glu Asn Val Glu Glu Asn Asp Asp Gly Ser Val Ala 245 250 255	768
TCA AGT GTT GAA GAA AGT ATA GCT TCA AGT GTT GAT GAA AGT ATA GAT Ser Ser Val Glu Glu Ser Ile Ala Ser Ser Val Asp Glu Ser Ile Asp 260 265 270	816
TCA AGT ATT GAA GAA AAT GTA GCT CCA ACT GTT GAA GAA ATC GTA GCT Ser Ser Ile Glu Glu Asn Val Ala Pro Thr Val Glu Glu Ile Val Ala 275 280 285	864
CCA AGT GTT GTA GAA AGT GTG GCT CCA AGT GTT GAA GAA AGT GTA GAA Pro Ser Val Val Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val Glu 290 295 300	912
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 305 310 315 320	960
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 325 330 335	1008

FIGURE 2/3

GAA AAT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA GAA ATC GTA GCT Glu Asn Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile Val Ala 340 345 350	1056
CCA ACT GTT GAA GAA ATT GTA GCT CCA AGT GTT GTA GAA AGT GTC GCT Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Ser Val Ala 355 360 365	1104
CCA AGT GTT GAA GAA AGT GTA GAA GAA AAT GTT GAA GAA AGT GTA GCT Pro Ser Val Glu Glu Ser Val Glu Glu Asn Val Glu Glu Ser Val Ala 370 375 380	1152
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 385 390 395 400	1200
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 405 410 415	1248
GAA AAT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA GAA ATC GTA GCT Glu Asn Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile Val Ala 420 425 430	1296
CCA ACT GTT GAA GAA ATT GTA GCT CCA AGT GTT GTA GAA AGT GTC GCT Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Ser Val Ala 435 440 445	1344
CCA AGT GTT GAA GAA AGT GTA GAA GAA AAT GTT GAA GAA AGT GTA GCT Pro Ser Val Glu Glu Ser Val Glu Glu Asn Val Glu Glu Ser Val Ala 450 455 460	1392
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 465 470 475 480	1440
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 485 490 495	1488
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 500 505 510	1536
GAA AAT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA GAA ATC GTA GCT Glu Asn Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile Val Ala 515 520 525	1584
CCA ACT GTT GAA GAA ATT GTA GCT CCA AGT GTT GTA GAA AGT GTC GCT Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Ser Val Ala 530 535 540	1632

FIGURE 2/C



CCA AGT GTT GAA GAA AGT GTA GAA GAA AAT GTT GAA GAA AGT GTA GCT Pro Ser Val Glu Glu Ser Val Glu Glu Asn Val Glu Glu Ser Val Ala 545 550 555 560	1680
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 565 570 575	1728
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA ATC GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ile Val Ala 580 585 590	1776
CCA ACT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA GAA ATT GTA GCT Pro Thr Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile Val Ala 595 600 605	1824
CCA AGT GTT GTA GAA AGT GTG GCT CCA AGT GTT GAA GAA AGT GTA GAA Pro Ser Val Val Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val Glu 610 615 620	1872
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 625 630 635 640	1920
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA ATC GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ile Val Ala 645 650 655	1968
CCA ACT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA GAA ATT GTA GCT Pro Thr Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile Val Ala 660 665 670	2016
CCA AGT GTT GTA GAA AGT GTG GCT CCA AGT GTT GAA GAA AGT GTA GAA Pro Ser Val Val Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val Glu 675 680 685	2064
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 690 695 700	2112
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 705 710 715 720	2160
GAA AAT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA GAA ATC GTA GCT Glu Asn Val Glu Glu Ile Val Ala Pro Thr Val Glu Glu Ile Val Ala 725 730 735	2208
CCA ACT GTT GAA GAA ATT GTA GCT CCA AGT GTT GTA GAA AGT GTG GCT Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Ser Val Ala 740 745 750	2256

FIGURE 2/D

CCA AGT GTT GAA GAA AGT GTA GAA GAA AAT GTT GAA GAA AGT GTA GCT Pro Ser Val Glu Glu Ser Val Glu Glu Asn Val Glu Glu Ser Val Ala 755 760 765	2304
GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala 770 775 780	2352
GAA AAT GTT GAA GAA AGT GTA GCT CCA ACT GTT GAA GAA ATT GTA GCT Glu Asn Val Glu Glu Ser Val Ala Pro Thr Val Glu Glu Ile Val Ala 785 790 795 800	2400
CCA AGT GTT GAA GAA AGT GTA GCT CCA AGT GTT GAA GAA AGT GTT GCT Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val Ala 805 810 815	2448
GAA AAC GTT GCA ACA AAT TTA TCA GAC AAT CTT TTA AGT AAT TTA TTA Glu Asn Val Ala Thr Asn Leu Ser Asp Asn Leu Leu Ser Asn Leu Leu 820 825 830	2496
GGT GGT ATC GAA ACT GAC GAA ATA AAC GAC AGT ATA TTA AAT GAC ATA Gly Gly Ile Glu Thr Glu Glu Ile Lys Asp Ser Ile Leu Asn Glu Ile 835 840 845	2544
GAA GAA GTA AAA GAA AAT GTA GTC ACC ACA ATA CTA GAA AAC GTA GAA Glu Glu Val Lys Glu Asn Val Val Thr Thr Ile Leu Glu Asn Val Glu 850 855 860	2592
GAA ACT ACA GCT GAA AGT GTA ACT ACT TTT AGT AAC ATA TTA GAC GAC Glu Thr Thr Ala Glu Ser Val Thr Thr Phe Ser Asn Ile Leu Glu Glu 865 870 875 880	2640
ATA CAA GAA AAT ACT ATT ACT AAT GAT ACT ATA GAC GAA AAA TTA GAA Ile Gln Glu Asn Thr Ile Thr Asn Asp Thr Ile Glu Glu Lys Leu Glu 885 890 895	2688
GAA CTC CAC GAA AAT GTA TTA AGT GCC GCT TTA GAA AAT ACC CAA AGT Glu Leu His Glu Asn Val Leu Ser Ala Ala Leu Glu Asn Thr Gln Ser 900 905 910	2736
GAA GAC GAA AAG AAA GAA GTA ATA GAT GTA ATT GAA GAA GTA AAA GAA Glu Glu Glu Lys Lys Glu Val Ile Asp Val Ile Glu Glu Val Lys Glu 915 920 925	2784
GAG GTC GCT ACC ACT TTA ATA GAA ACT GTC GAA CAG GCA GAA GAA AAG Glu Val Ala Thr Thr Leu Ile Glu Thr Val Glu Gln Ala Glu Glu Lys 930 935 940	2832
AGC GCA AAT ACA ATT ACG GAA ATA TTT GAA AAT TTA GAA GAA AAT GCA Ser Ala Asn Thr Ile Thr Glu Ile Phe Glu Asn Leu Glu Glu Asn Ala 945 950 955 960	2880

FIGURE 2/E

GTA GAA ACT AAT GAA AAT GTT GCA GAG AAT TTA GAG AAA TTA AAC GAA Val Glu Ser Asn Glu Asn Val Ala Glu Asn Leu Glu Lys Leu Asn Glu 965 970 975	2928
ACT GTA TTT AAT ACT GTA TTA GAT AAA GTA GAG GAA ACA GTA GAA ATT Thr Val Phe Asn Thr Val Leu Asp Lys Val Glu Glu Thr Val Glu Ile 980 985 990	2976
AGC GGA GAA AGT TTA GAA AAC AAT GAA ATG GAT AAA GCA TTT TTT AGT Ser Gly Glu Ser Leu Glu Asn Asn Glu Met Asp Lys Ala Phe Phe Ser 995 1000 1005	3024
GAA ATA TTT GAT AAT GTA AAA GGA ATA CAA GAA AAT TTA TTA ACA GGT Glu Ile Phe Asp Asn Val Lys Gly Ile Gln Glu Asn Leu Leu Thr Gly 1010 1015 1020	3072
ATG TTT CGA AGT ATA GAA ACC AGT ATA GTA ATC CAA TCA GAA GAA AAG Met Phe Arg Ser Ile Glu Thr Ser Ile Val Ile Gln Ser Glu Glu Lys 1025 1030 1035 1040	3120
GTT GAT TTG AAT GAA AAT GTG GTT AGT TCG ATT TTA GAT AAT ATA GAA Val Asp Leu Asn Glu Asn Val Val Ser Ser Ile Leu Asp Asn Ile Glu 1045 1050 1055	3168
AAT ATG AAA GAA GGT TTA TTA AAT AAA TTA GAA AAT ATT TCA AGT ACT Asn Met Lys Glu Gly Leu Leu Asn Lys Leu Glu Asn Ile Ser Ser Thr 1060 1065 1070	3216
GAA GGT GTT CAA GAA ACT GTA ACT GAA CAT GTA GAA CAA AAT GTA TAT Glu Gly Val Gln Glu Thr Val Thr Glu His Val Glu Gln Asn Val Tyr 1075 1080 1085	3264
GTG GAT GTT GAT GTT CCT GCT ATG AAA GAT CAA TTT TTA GGA ATA TTA Val Asp Val Asp Val Pro Ala Met Lys Asp Gln Phe Leu Gly Ile Leu 1090 1095 1100	3312
AAT GAG GCA GGA GGC TTG AAA GAA ATG TTT TTT AAT TTG GAA GAT GTA Asn Glu Ala Gly Gly Leu Lys Glu Met Phe Phe Asn Leu Glu Asp Val 1105 1110 1115 1120	3360
TTT AAA AGT GAA AGT GAT GTA ATT ACT GTA GAA GAA ATT AAG GAT GAA Phe Lys Ser Glu Ser Asp Val Ile Thr Val Glu Glu Ile Lys Asp Glu 1125 1130 1135	3408
CGG GTT CAA AAA GAG GTA GAA AAA GAA ACT GTT AGT ATT ATT GAA GAA Pro Val Gln Lys Glu Val Glu Lys Glu Thr Val Ser Ile Ile Glu Glu 1140 1145 1150	3456
ATG GAA GAA AAT ATT GTA GAT GTA TTA GAG GAA GAA AAA GAA GAT TTA Met Glu Glu Asn Ile Val Asp Val Leu Glu Glu Glu Lys Glu Asp Leu 1155 1160 1165	3504

FIGURE 2/F

ACA GAC AAG ATG ATA GAT GCA GTA GAA GAA TCC ATA GAA ATA TCT TCA Thr Asp Lys Met Ile Asp Ala Val Glu Glu Ser Ile Glu Ile Ser Ser 1170 1175 1180	3552
GAT TCT AAA GAA GAA ACT GAA TCT ATT AAA GAT AAA GAA AAA GAT GTT Asp Ser Lys Glu Glu Thr Glu Ser Ile Lys Asp Lys Glu Lys Asp Val 1185 1190 1195 1200	3600
TCA GTA GTT GTT GAA GAA GTT CAA GAC AAT GAT ATG GAT GAA AGT GTT Ser Leu Val Val Glu Glu Val Gln Asp Asn Asp Met Asp Glu Ser Val 1205 1210 1215	3648
GAG AAA GTT TTA GAA TTG AAA AAT ATG GAA GAG GAC TTA ATG AAG GAT Glu Lys Val Leu Glu Leu Lys Asn Met Glu Glu Glu Leu Met Lys Asp 1220 1225 1230	3696
GCT GTT GAA ATA AAT GAC ATT ACT AGC AAA CTT ATT GAA GAA ACT CAA Ala Val Glu Ile Asn Asp Ile Thr Ser Lys Leu Ile Glu Glu Thr Gln 1235 1240 1245	3744
GAG TTA AAT GAA GTA GAA GCA GAT TTA ATA AAA GAT ATG GAA AAA TTA Glu Leu Asn Glu Val Glu Ala Asp Leu Ile Lys Asp Met Glu Lys Leu 1250 1255 1260	3792
AAA GAA TTA GAA AAA GCA TTA TCA GAA GAT TCT AAA GAA ATA ATA GAT Lys Glu Leu Glu Lys Ala Leu Ser Glu Asp Ser Lys Glu Ile Ile Asp 1265 1270 1275 1280	3840
GCA AAA GAT GAT ACA TTA GAA AAA GTT ATT GAA GAG GAA CAT GAT ATA Ala Lys Asp Asp Thr Leu Glu Lys Val Ile Glu Glu Glu His Asp Ile 1285 1290 1295	3888
ACG ACC ACC TTG GAT GAA GTT GTA GAA TTA AAA GAT GTC GAA GAA GAC Thr Thr Thr Leu Asp Glu Val Val Glu Leu Lys Asp Val Glu Glu Asp 1300 1305 1310	3936
AAG ATC GAA AAA GTA TCT GAT TTA AAA GAT CTT GAA GAA GAT ATA TTA Lys Ile Glu Lys Val Ser Asp Leu Lys Asp Leu Glu Glu Asp Ile Leu 1315 1320 1325	3984
AAA GAA GTA AAA GAA ATC AAA GAA CTT GAA AGT GAA ATT TTA GAA GAT Lys Glu Val Lys Glu Ile Lys Glu Leu Glu Ser Glu Ile Leu Glu Asp 1330 1335 1340	4032
TAT AAA GAA TTA AAA ACT ATT GAA ACA GAT ATT TTA GAA GAG AAA AAA Tyr Lys Glu Leu Lys Thr Ile Glu Thr Asp Ile Leu Glu Glu Lys Lys 1345 1350 1355 1360	4080
GAA ATA GAA AAA GAT CAT TTT GAA AAA TTC GAA GAA GAA GCT GAA GAA Glu Ile Glu Lys Asp His Phe Glu Lys Phe Glu Glu Glu Ala Glu Glu 1365 1370 1375	4128

FIGURE 2/G

ATA AAA GAT CTT GAA GCA GAT ATA TTA AAA GAA GTA TCT TCA TTA GAA Ile Lys Asp Leu Glu Ala Asp Ile Leu Lys Glu Val Ser Ser Leu Glu 1380 1385 1390	4176
GTT GAA GAA GAA AAA AAA TTA GAA GAA GTA CAC GAA TTA AAA GAA GAG Val Glu Glu Glu Lys Lys Leu Glu Glu Val His Glu Leu Lys Glu Glu 1395 1400 1405	4224
GTA GAA CAT ATA ATA AGT GGT GAT GCG CAT ATA AAA GGT TTG GAA GAA Val Glu His Ile Ile Ser Gly Asp Ala His Ile Lys Gly Leu Glu Glu 1410 1415 1420	4272
GAT GAT TTA GAA GAA GTA GAT GAT TTA AAA GGA AGT ATA TTA GAC ATG Asp Asp Leu Glu Glu Val Asp Asp Leu Lys Gly Ser Ile Leu Asp Met 1425 1430 1435 1440	4320
TTA AAG GGA GAT ATG GAA TTA GGC GAT ATG GAT AAG GAA AGT TTA GAA Leu Lys Gly Asp Met Glu Leu Gly Asp Met Asp Lys Glu Ser Leu Glu 1445 1450 1455	4368
GAT GTA ACA ACA AAA CTT GCA GAA AGA GTT GAA TCC TTA AAA GAT GTT Asp Val Thr Thr Lys Leu Gly Glu Arg Val Glu Ser Leu Lys Asp Val 1460 1465 1470	4416
TTA TCT AGT GCA TTA GGC ATG GAT GAA GAA CAA ATG AAA ACA AGA AAA Leu Ser Ser Ala Leu Gly Met Asp Glu Glu Gln Met Lys Thr Arg Lys 1475 1480 1485	4464
AAA GGT CAA AGA CCT AAG TTG GAA GAA GTA TTA TTA AAA GAA GAG GTT Lys Ala Gln Arg Pro Lys Leu Glu Glu Val Leu Leu Lys Glu Glu Val 1490 1495 1500	4512
AAA GAA GAA CCA AAG AAA AAA ATA ACA AAA AAG AAA GTA AGG TTT GAT Lys Glu Glu Pro Lys Lys Lys Ile Thr Lys Lys Lys Val Arg Phe Asp 1505 1510 1515 1520	4560
ATT AAG GAT AAG GAA CCA AAA GAT GAA ATA GTA GAA GTT GAA ATG AAA Ile Lys Asp Lys Glu Pro Lys Asp Glu Ile Val Glu Val Glu Met Lys 1525 1530 1535	4608
GAT GAA GAT ATA GAA GAA GAT GTA GAA GAA GAT ATA GAA GAA GAT ATA Asp Glu Asp Ile Glu Glu Asp Val Glu Glu Asp Ile Glu Glu Asp Ile 1540 1545 1550	4656
GAA GAA GAT AAA GTT GAA GAT ATA GAT GAA GAT ATA GAT GAA GAT ATA Glu Glu Asp Lys Val Glu Asp Ile Asp Glu Asp Ile Asp Glu Asp Ile 1555 1560 1565	4704
GGT GAA GAC AAA GAT GAA GTT ATA GAT TTA ATA GTC CAA AAA GAG AAA Gly Glu Asp Lys Asp Glu Val Ile Asp Leu Ile Val Gln Lys Glu Lys 1570 1575 1580	4752

FIGURE 2/H

CGC ATT GAA AAG GTT AAA GCG AAA AAG AAA AAA TTA GAA AAA AAA GTT Arg Ile Glu Lys Val Lys Ala Lys Lys Lys Lys Leu Glu Lys Lys Val 1585 1590 1595 1600	4800
GAA GAA GGT GTT AGT GGT CTT AAA AAA CAC GTA GAC GAA GTA ATG AAA Glu Glu Gly Val Ser Gly Leu Lys Lys His Val Asp Glu Val Met Lys 1605 1610 1615	4848
TAT GTT CAA AAA ATT GAT AAA GAA GTT GAT AAA GAA GTA TCT AAA GCT Tyr Val Gln Lys Ile Asp Lys Glu Val Asp Lys Glu Val Ser Lys Ala 1620 1625 1630	4896
TTA GAA TCA AAA AAT GAT GTT ACT AAT GTT TTA AAA CAA AAT CAA GAT Leu Glu Ser Lys Asn Asp Val Thr Asn Val Leu Lys Gln Asn Gln Asp 1635 1640 1645	4944
TTT TTT AGT AAA GTT AAA AAC TTC GTA AAA AAA TAT AAA GTA TTT GCT Phe Phe Ser Lys Val Lys Asn Phe Val Lys Lys Tyr Lys Val Phe Ala 1650 1655 1660	4992
GCA CCA TTC ATA TCT GCC GTT GCA GCA TTT GCA TCA TAT GTA GTT GCG Ala Pro Phe Ile Ser Ala Val Ala Ala Phe Ala Ser Tyr Val Val Gly 1665 1670 1675 1680	5040
TTC TTT ACA TTT TCT TTA TTT TCA TCA TGT GTA ACA ATA GCT TCT TCA Phe Phe Thr Phe Ser Leu Phe Ser Ser Cys Val Thr Ile Ala Ser Ser 1685 1690 1695	5088
ACT TAC TTA TTA TCA AAA GTT GAC AAA ACT ATA AAT AAA AAT AAG GAG Thr Tyr Leu Leu Ser Lys Val Asp Lys Thr Ile Asn Lys Asn Lys Glu 1700 1705 1710	5136
AGA CCG TTT TAT TCA TTT GTA TTT GAT ATC TTT AAG AAT TTA AAA CAT Arg Pro Phe Tyr Ser Phe Val Phe Asp Ile Phe Lys Asn Leu Lys His 1715 1720 1725	5184
TAT TTA CAA CAA ATG AAA GAA AAA TTT ACT AAA GAA AAA AAT AAT AAT Tyr Leu Gln Gln Met Lys Glu Lys Phe Ser Lys Glu Lys Asn Asn Asn 1730 1735 1740	5232
GTA ATA GAA GTA ACA AAC AAA GCT GAG AAA AAA GGT AAT GTA CAG GTA Val Ile Glu Val Thr Asn Lys Ala Glu Lys Lys Gly Asn Val Gln Val 1745 1750 1755 1760	5280
ACA AAT AAA ACC GAG AAA ACA ACT AAA GTT GAT AAA AAT AAT AAA GTA Thr Asn Lys Thr Glu Lys Thr Thr Lys Val Asp Lys Asn Asn Lys Val 1765 1770 1775	5328
CCG AAA AAA AGA AGA ACG CAA AAA TCA AAA TAA Pro Lys Lys Arg Arg Thr Gln Lys Ser Lys * 1780 1785	5361

FIGURE 2/I

## (2) INFORMATION FOR SEQ ID NO: 3:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1891 base pairs  
 (B) TYPE: nucleotide  
 (C) STRANDEDNESS: double  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: cDNA

## (ix) FEATURE:

- (A) NAME/KEY: CDS  
 (B) LOCATION: 2..1891

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

T ACA TTA ACT GAA AGT GTA GAT GAT AAT AAA AAT TTA GAA GAA GCC 46  
 Thr Leu Thr Glu Ser Val Asp Asp Asn Lys Asn Leu Glu Glu Ala  
 1 5 10 15

GAA GAT ATA AAG GAA AAT ATC TTA TTA AGT AAT ATA GAA GAA CCA AAA 94  
 Glu Asp Ile Lys Glu Asn Ile Leu Leu Ser Asn Ile Glu Glu Pro Lys  
 20 25 30

GAA AAT ATT ATT GAC AAT TTA TTA AAT AAT ATT CGA CAA AAT TCA GAA 142  
 Glu Asn Ile Ile Asp Asn Leu Leu Asn Asn Ile Gly Gln Asn Ser Glu  
 35 40 45

AAA CAA GAA AGT GTA TCA GAA AAT GTA CAA GTC ACT GAT GAA CTT TTT 190  
 Lys Gln Glu Ser Val Ser Glu Asn Val Gln Val Ser Asp Glu Leu Phe  
 50 55 60

AAT GAA TTA TTA AAT AGT GTA GAT GTT AAT GGA GAA GTA AAA GAA AAT 238  
 Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly Glu Val Lys Glu Asn  
 65 70 75

ATT TTC GAC GAA AGT CAA GTT AAT GAC GAT ATT TTT AAT AGT TTA GTA 286  
 Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile Phe Asn Ser Leu Val  
 80 85 90 95

AAA AGT GTT CAA CAA GAA CAA CAA CAC AAT GTT GAA GAA AAA GTT GAA 334  
 Lys Ser Val Gln Gln Glu Gln Gln His Asn Val Glu Glu Lys Val Glu  
 100 105 110

GAA AGT GTA GAA GAA AAT GAC GAA CAA AGT GTA GAA GAA AAT GTA GAA 382  
 Glu Ser Val Glu Glu Asn Asp Glu Glu Ser Val Glu Glu Asn Val Glu  
 115 120 125

GAA AAT GTA GAA GAA AAT CAC GAC GGA AGT GTA GCC TCA AGT GTT GAA 430  
 Glu Asn Val Glu Glu Asn Asp Asp Gly Ser Val Ala Ser Ser Val Glu  
 130 135 140

FIGURE 3/A

GAA AGT ATA GCT TCA AGT GTT GAT GAA AGT ATA GAT TCA AGT ATT GAA Glu Ser Ile Ala Ser Ser Val Asp Glu Ser Ile Asp Ser Ser Ile Glu 145 150 155	478
GAA AAT GTA GCT CCA ACT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA Glu Asn Val Ala Pro Thr Val Glu Glu Ile Val Ala Pro Thr Val Glu 160 165 170 175	526
GAA ATT GTA GCT CCA AGT GTT GTA GAA AGT GTC GCT CCA AGT GTT GAA Glu Ile Val Ala Pro Ser Val Val Glu Ser Val Ala Pro Ser Val Glu 180 185 190	574
GAA AGT GTA GCT CCA AGT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val Ala Glu Asn Val Glu 195 200 205	622
GAA AGT GTA GCT GAA AAT GTT GAA GAA ATC GTA GCT CCA AGT GTT GAA Glu Ser Val Ala Glu Asn Val Glu Glu Ile Val Ala Pro Ser Val Glu 210 215 220	670
GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu 225 230 235	718
GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu 240 245 250 255	766
GAA AGT GTA GCT GAA AAT GTT GAA GAA ATC GTA GCT CCA AGT GTT GAA Glu Ser Val Ala Glu Asn Val Glu Glu Ile Val Ala Pro Thr Val Glu 260 265 270	814
GAA AGT GTA GCT CCA ACT GTT GAA GAA ATT GTA GCT CCA ACT GTT GAA Glu Ser Val Ala Pro Thr Val Glu Glu Ile Val Ala Pro Thr Val Glu 275 280 285	862
GAA AGT GTA GCT CCA ACT GTT GAA GAA ATT GTA GTT CCA AGT GTT GAA Glu Ser Val Ala Pro Thr Val Glu Glu Ile Val Val Pro Ser Val Glu 290 295 300	910
GAA AGT GTA GCT CCA AGT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val Ala Glu Asn Val Glu 305 310 315	958
GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu 320 325 330 335	1006
GAA AGT GTA GCT GAA AAT GTT GAA GAA AGT GTA GCT GAA AAT GTT GAA Glu Ser Val Ala Glu Asn Val Glu Glu Ser Val Ala Glu Asn Val Glu 340 345 350	1054

FIGURE 3/B

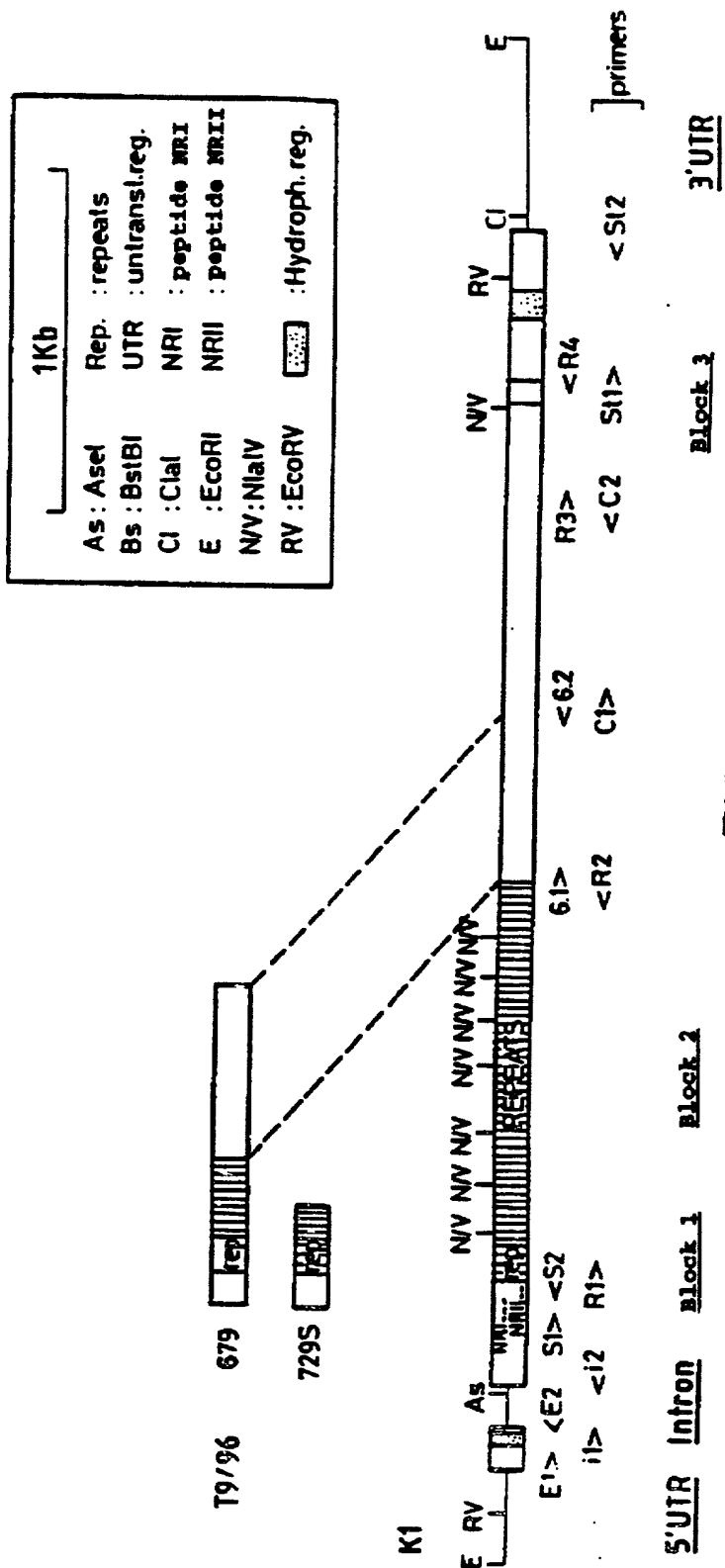


GAA ATC GTA GCT CCA AGT GTT GAA GAA ATC GTA GCT CCA ACT GTT GAA Glu Ile Val Ala Pro Ser Val Glu Glu Ile Val Ala Pro Thr Val Glu 355 360 365	1102
GAA AGT GTT GCT GAA AAC GTT GCA ACA AAT TTA TCA GAC AAT CTT TTA Glu Ser Val Ala Glu Asn Val Ala Thr Asn Leu Ser Asp Asn Leu Leu 370 375 380	1150
AGT AAT TTA TTA GGT GGT ATC GAA ACT GAG GAA ATA AAG GAC AGT ATA Ser Asn Leu Leu Gly Gly Ile Glu Thr Glu Glu Ile Lys Asp Ser Ile 385 390 395	1198
TTA AAT GAG ATA GAA GAA GTA AAA GAA AAT GTA GTC ACC ACA ATA CTA Leu Asn Glu Ile Glu Glu Val Lys Glu Asn Val Val Thr Thr Ile Leu 400 405 410 415	1246
GAA AAA GTA GAA GAA ACT ACA GCT GAA AGT GTA ACT ACT TTT AGT AAT Glu Lys Val Glu Glu Thr Thr Ala Glu Ser Val Thr Thr Phe Ser Asn 420 425 430	1294
ATA TTA GAG GAG ATA CAA GAA AAT ACT ATT ACT AAT GAT ACT ATA GAG Ile Leu Glu Glu Ile Gln Glu Asn Thr Ile Thr Asn Asp Thr Ile Glu 435 440 445	1342
GAA AAA TTA GAA GAA CTC CAC GAA AAT GTA TTA AGT GCC GCT TTA GAA Glu Lys Leu Glu Glu Leu His Glu Asn Val Leu Ser Ala Ala Leu Glu 450 455 460	1390
AAT ACC CAA ACT GAA GAG GAA AAG AAA GAA GTA ATA GAT GTA ATT GAA Asn Thr Gln Ser Glu Glu Glu Lys Lys Glu Val Ile Asp Val Ile Glu 465 470 475	1438
GAA GTA AAA GAA GAG GTC GCT ACC ACT TTA ATA GAA ACT GTC GAA CAG Glu Val Lys Glu Glu Val Ala Thr Thr Leu Ile Glu Thr Val Glu Gln 480 485 490 495	1486
GCA GAA GAA GAG AGC GAA AGT ACA ATT ACG GAA ATA TTT GAA AAT TTA Ala Glu Glu Glu Ser Glu Ser Thr Ile Thr Glu Ile Phe Glu Asn Leu 500 505 510	1534
GAA GAA AAT GCA GTA GAA AGT AAT GAA AAA GTT GCA GAG AAT TTA GAG Glu Glu Asn Ala Val Glu Ser Asn Glu Lys Val Ala Glu Asn Leu Glu 515 520 525	1582
AAA TTA AAC GAA ACT GTA TTT AAT ACT GTA TTA GAT AAA GTA GAG GAA Lys Leu Asn Glu Thr Val Phe Asn Thr Val Leu Asp Lys Val Glu Glu 530 535 540	1630
ACA GTA GAA ATT AGC GGA GAA AGT TTA GAA AAC AAT GAA ATG GAT AAA Thr Val Glu Ile Ser Gly Glu Ser Leu Glu Asn Asn Glu Met Asp Lys 545 550 555	1678

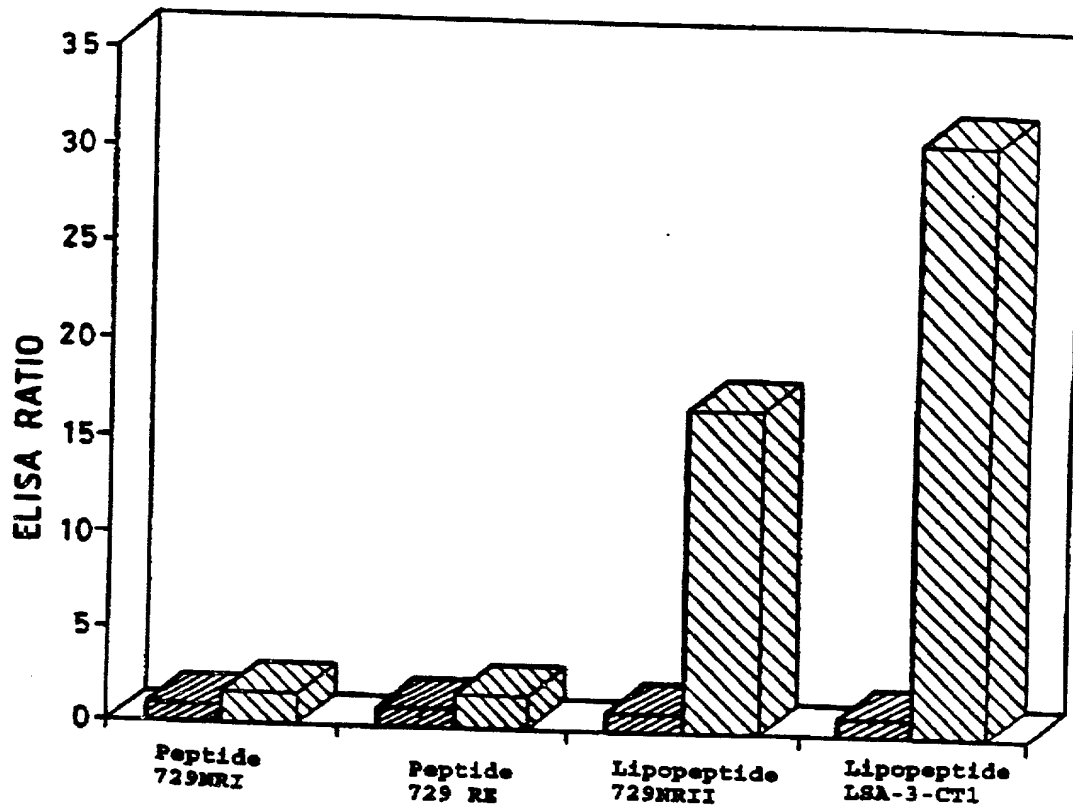
FIGURE 3/c

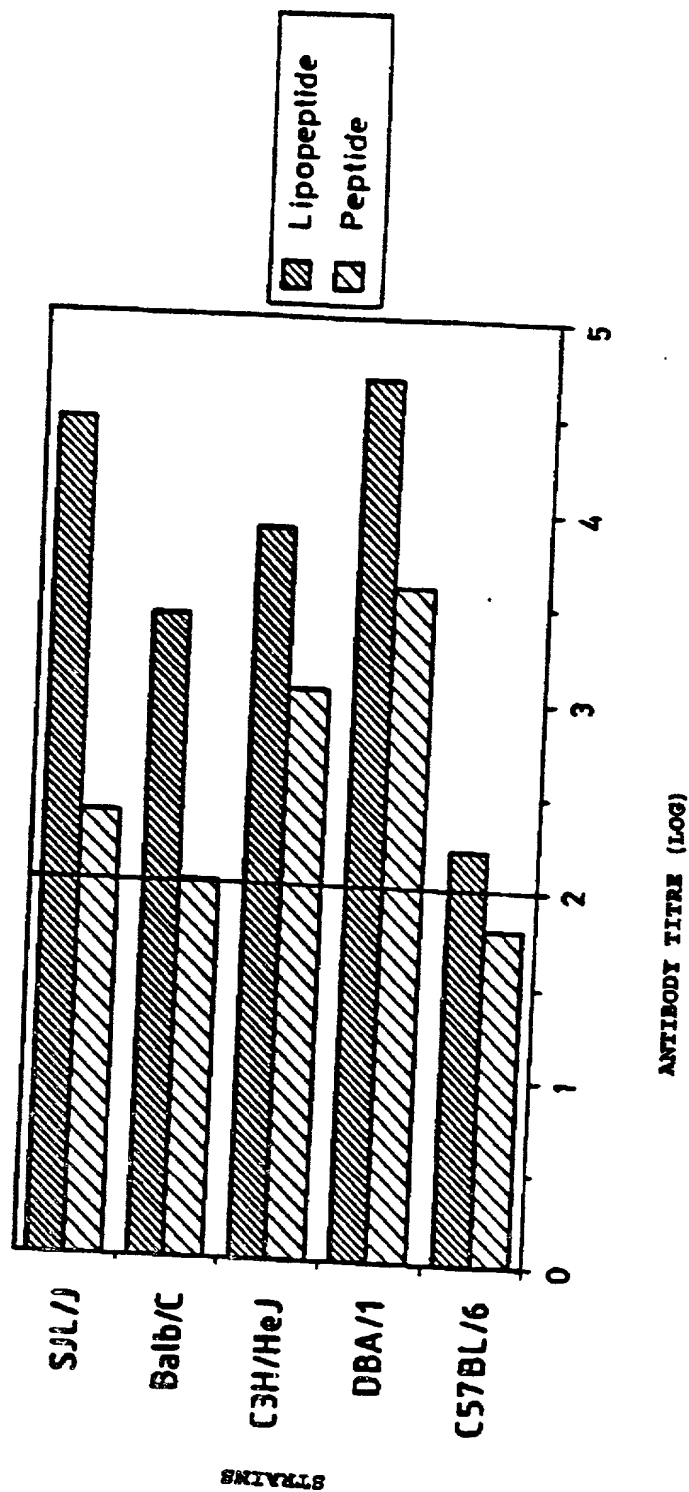
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Ala Phe Phe Ser Glu Ile Phe Asp Asn Val Lys Gly Ile Gln Glu Asn	
560 565 570 575	
TTA TTA ACA GGT ATG TTT CGA ACT ATA GAA ACC AGT ATA GTA ATC CAA	1774
Leu Leu Thr Gly Met Phe Arg Ser Ile Glu Thr Ser Ile Val Ile Gln	
580 585 590	
TCA GAA GAA AAG GTT GAT TTC AAT GAA AAT GTC GTT AGT TCG ATT TTA	1822
Ser Glu Glu Lys Val Asp Leu Asn Glu Asn Val Val Ser Ser Ile Leu	
595 600 605	
GAT AAT ATA GAA AAT ATG AAA GAA GGT TTA TTA AAT AAA TTA GAA AAT	1870
Asp Asn Ile Glu Asn Met Lys Glu Gly Leu Leu Asn Lys Leu Glu Asn	
610 615 620	
ATT TCA AGT ACT GAA GGC GAA	1891
Ile Ser Ser Thr Glu Gly Glu	
625 630	

FIGURE 3/D





FIG. 5



**FIG-6**

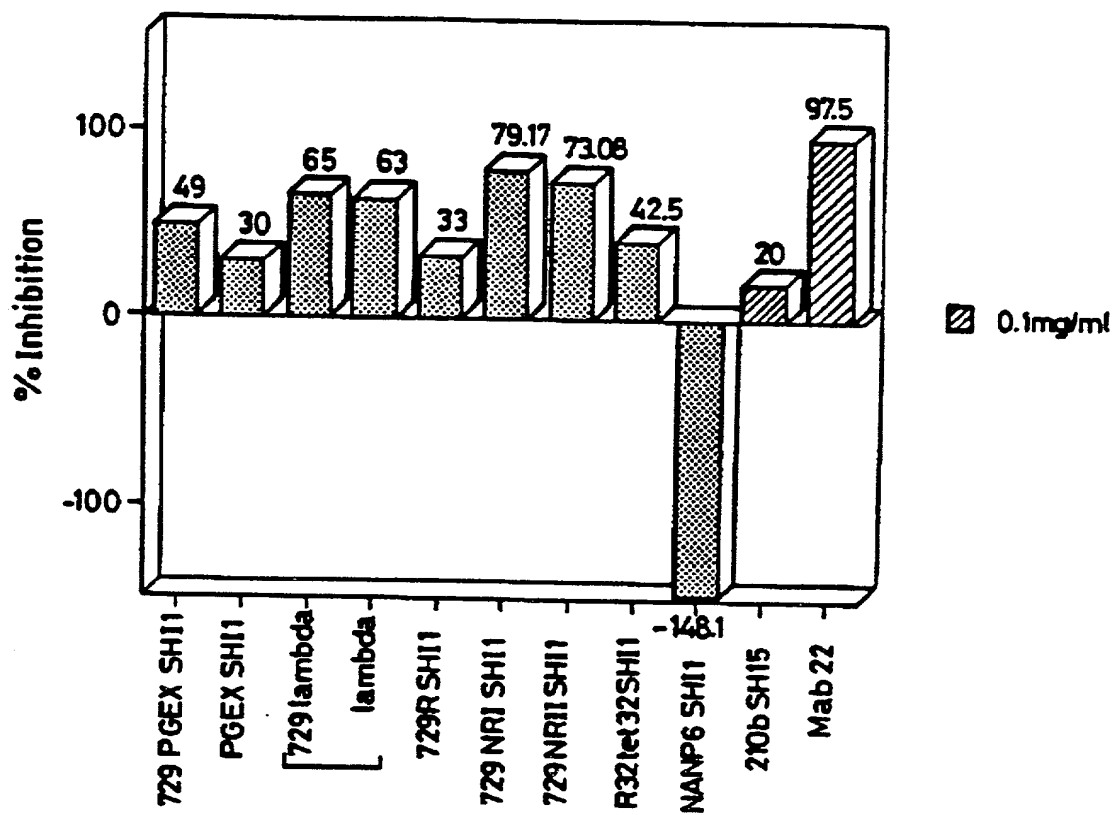
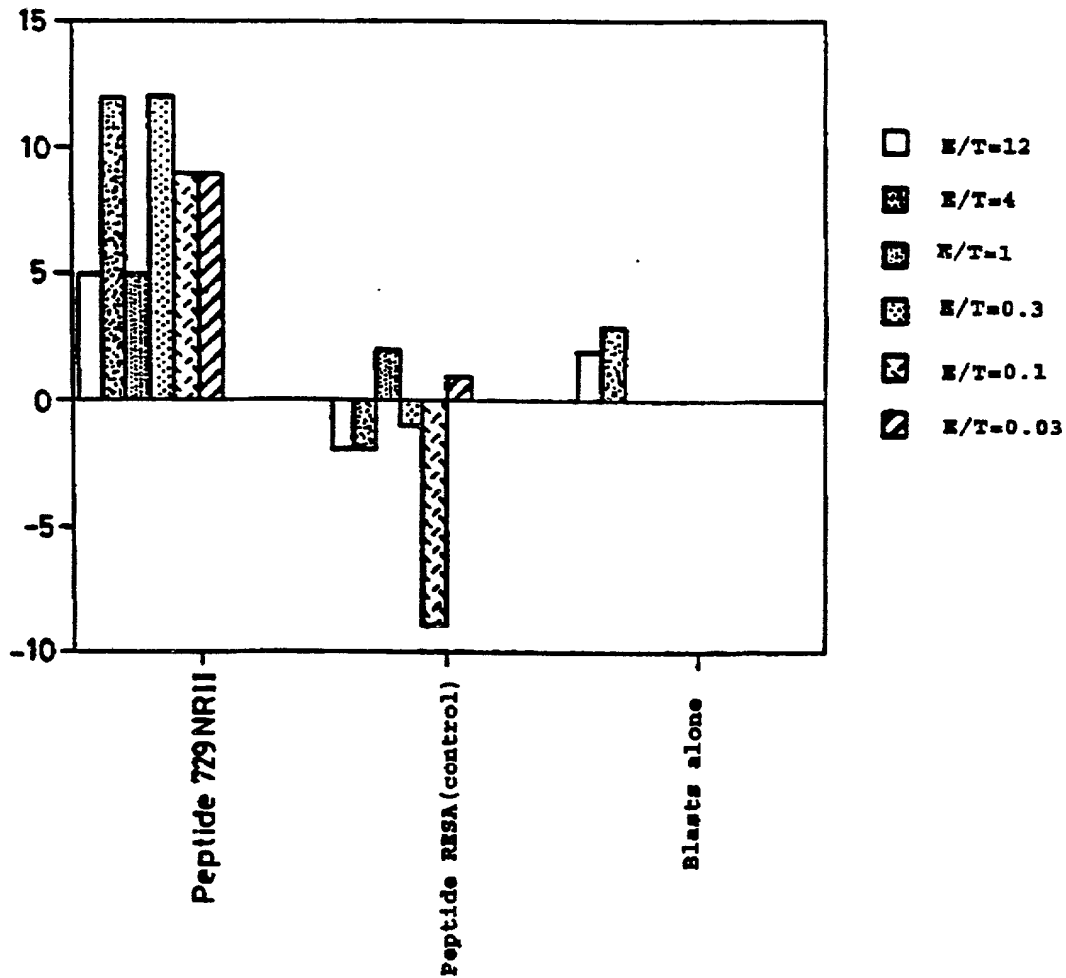


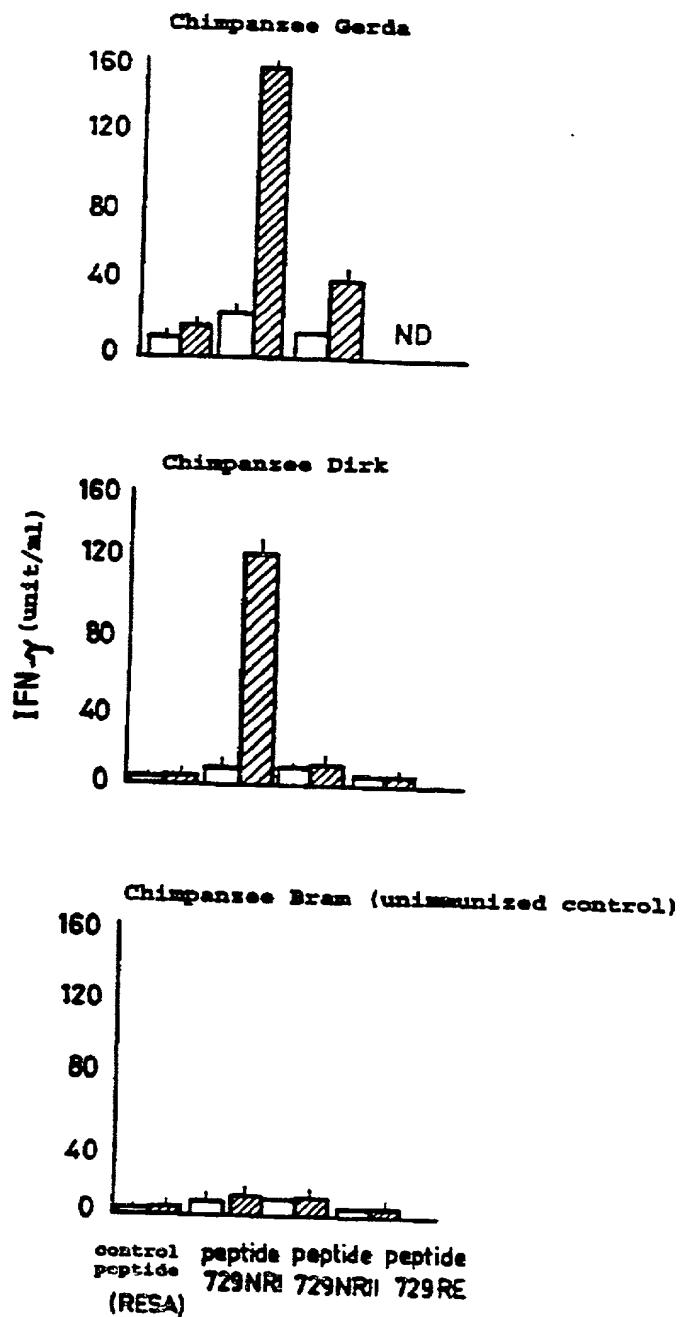
FIG. 7

FIG. 8

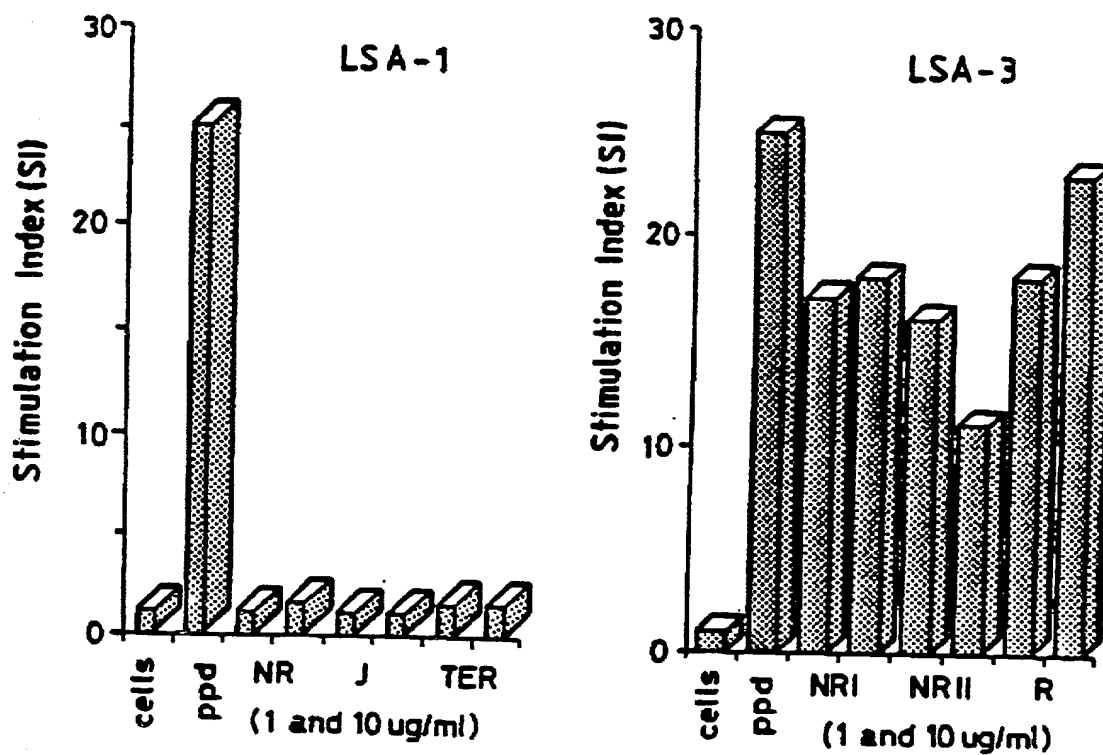


☒ Before immunization

☐ After immunization



**FIG\_9**

FIG. 10